UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,510	10/12/2001	Wolf-Dietrich Weber	02998.P017	3990

7590	01/30/2004

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EXAMINER
NGUYEN, THAN VINH

ART UNIT	PAPER NUMBER
2187	9

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _24 November 2003_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-20_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _12 October 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
since a specific reference was included in the first sentence of the specification or in an Application Data Sheet.
37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific
reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4)☐ Interview Summary (PTO-413) Paper No(s). _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.

EXAMINER

ART UNIT	PAPER

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Commissioner for Patents

DETAILED ACTION

1.   This is a response to the amendment, filed 11/24/03.

2.   Claims 1-20 are pending. Claims 18-20 are newly added.

3.   Correction: The previous rejection to claims 1-3,9,10,12 using Aref et al should have been
under 35 USC 102(b), not (e), since the cited art is published more than 1 year before application
by Applicant.

Claim Objections

4.   Claim 17,20 are objected to because of the following informalities:

(claim 17, line 4) "band" should be --bank--..

(claim 20, line 3) "band" should be --bank--..

Appropriate correction is required.

Response to Amendment/Arguments

5.   Applicant amendment and arugments, filed 11/4/03, are not persuasive to overcome the
previous prior art rejection. As to claims 1-3,9,10,12 Applicant argues that Aref does not teach
the limitation of maintaining the order of requests within each thread.   The Examiner interprets
the claim language "maintaining order of requests" as keeping/servicing the requests in some kind
of order, not necessarily in any specific order.   That is, the requests are serviced and tracked.
Aref teaches receiving multiple requests and servicing these requests. Since Aref teaches queuing,

ordering, and tracking the disk requests, obviously in some kind of order, Aref satisfies the

limitation of "maintaining" the order of the requests.

6.   As to claims 1-17, Applicant makes the same argument as above. The Examiner disagrees

with Applicant. The Examiner interprets the claim language "maintaining order of requests" as

keeping/servicing the requests in some kind of order, not necessarily in any specific order since

the claim did specify further. Since Rixner teaches a scheduler to keep the requests in some sort of

order, the Examiner maintains that Rixner meets the limitation of the claimed invention.

Claim Rejections - 35 USC § 102

7.   Claims 1-3,9,10,12,18,19 are rejected under 35 U.S.C. 102(b) as being anticipated by Aref

et al (USP 6,023,720).

As to claims 1,2,10,12,18:

8.   Aref teaches a disk scheduling system. Aref teaches scheduling access to a resource

comprising: combining quality of service (QOS) scheduling for processing request threads, that

substantially maintains QOS for each thread, and resource scheduling, that substantially

maximizes resource efficiency (guaranteeing QOS by efficient resource scheduling; 4/14-64).

Aref teaches substantially maintaining QOS for each request thread by maintaining/guaranteeing

QOS to the access/read requests (MSFS 12; 4/14-33). Aref teaches resource scheduling to

maximize resource efficiency by performing resource/disk scheduling to minimize seek time and

guaranteeing data delivery at specified time(4/34-64).

As to claim 3,19:

9.   Aref teaches the stages are ordered to determine an order of requests to meet QOS

guarantees and determine an order of requests for resource efficiency such that if the resource

efficiency order satisfies QOS guarantees, a request is scheduled according to a first resource

efficiency order, else a request is schedule in accordance with a second resource efficiency order

(schedule request based on EDF algorithm to guarantee QOS; 4/5-39).

10.   Claims 1-20 are rejected under 35 U.S.C. 102(a) as being anticipated by Rixner (Memory

Access Scheduling, 2000).

As to claims 1,2,10,11,12,18:

11.   Rixner teaches combining scheduling of requests and scheduling of request and

maintaining order of requests while maintaining QOS scheduling and resource scheduling

(memory access scheduler, pg. 2 col 2 - pg. 3 col 1; pg. 4 col 1).

As to claim 3,19:

12.   Rixner teaches determining an order of requests to meet QOS guarantees (scheduling base

on request arrival; pg. 1 col 1; pg. 7 col 2 - pg. 8 col 1);

        determining an order of requests for resource efficiency (pick scheduling policy; pg. 4 col

2, Table 1); and

        if the resource efficiency order satisfies QOS guarantees, and order is maintained,

scheduling a request according to a first resource efficiency order, else scheduling with a second

resource efficiency order (pick best scheduling policy; pg. 4 col 2 , Table 1).

As to claims 4-6,13-15:

13.   Rixner teaches maintaining and using a thread scheduling/access history(bandwidth usage),

to determine scheduling of threads (use most pending policy schedules access base based on the

most demanded row which means that a history is kept of the bandwidth usage to determine

which is the most demanded/highest bandwidth; Table 1).

As to claim 7:

14.   Rixner teaches maintaining prioritizing threads according to bandwidth usage and

sequencing requests (use most priority policy which schedules access base based on the most

highest priority operations.; Table 1).

As to claim 8,16:

15.   Rixner teaches scheduling based on cost-function scheduling (fewest pending policy which

weighs fewest pending and most pending policies to perform access; Table 1).

As to claim 9,17,20:

16.   Rixner teaches scheduling for DRAM and deciding which bank to use (memory access

scheduling for DRAM; pg. 1 col 2; pg. 3-4).

Conclusion

17.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CAR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CAR

1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

will the statutory period for reply expire later than SIX MONTHS from the mailing date of this

final action.

18.   Any inquiry concerning this communication or earlier communications from the examiner

should be directed to Than Nguyen whose telephone number is (703) 305-3866. The examiner

can normally be reached on M-F from 8:00 a.m. to 3:00 p.m. EST.

19.   Any inquiry of a general nature or relating to the status of this application should be

directed to the Group receptionist whose telephone number is (703) 305-9600.

20.   The fax phone number for Art Unit 2187 is 703-308-9051 or 703-308-9052.

Than Nguyen

Primary Patent Examiner

January 27, 2004